Active Project (2016 - 2016)

ERASMUS: Food Contact Safe Plastics Recycler and 3D Printer System, Phase I Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)

ABSTRACT

One of the goals of the Human Exploration and Operations Mission Directorate (HEOMD) from 2012 is to utilize the ISS for developing the systems and protocols necessary to humans to venture beyond low Earth orbit for extended durations, and with the push from Congress in 2015 to build a deep space habitat for a Mars mission by 2018, the goals of HEOMD are increasingly important to meet. ERASMUS will enable these goals by providing a technology suite which is both a trash recycling unit and a microbial sterilizer. The ERASMUS technology suite contains a plastics recycler, dry heat sterilizer, and 3D printer that accepts previously used utensils, trays, and food storage containers, sterilizes these pre-used materials, recycles them into food grade 3D printer filament, and fabricates food contact safe 3D printed parts. This effort intends to minimize the requirements for resupplying and/or storing excess wet wipes, utensils, food containers, and waste. It also intends to improve astronaut health and safety by providing utensils which are truly sterile and free of harmful contaminants for long duration missions. In the phase II effort, we will further enable the goals of HEOMD by expanding ERASMUS to provide a medical grade 3D printer.

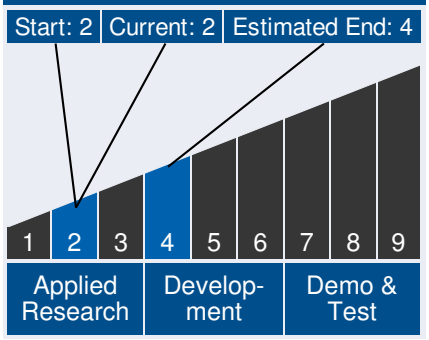
ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: The proposed ERASMUS technology will find use on the ISS and on any future long duration manned mission as a means to promote astronaut health and safety as well as lowering mission cost and trash generated by providing a means to create needed parts while in space. TUI anticipates that the expansion of ERASMUS into medical grade 3D printing in the Phase II effort will further the need for ERASMUS on the ISS, long duration missions, and on manned habitats.

Table of Contents

Technology Maturity



Management Team

Program Executives:

- Joseph Grant
- Laguduva Kubendran

Program Manager:

- Carlos Torrez

Continued on following page.

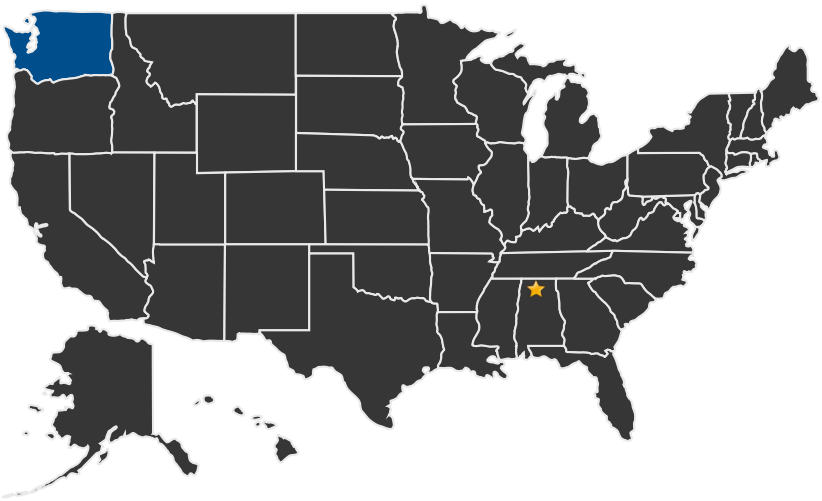
ERASMUS: Food Contact Safe Plastics Recycler and 3D Printer System, Phase I Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)

To the commercial space industry:

Potential Non-NASA Commercial Applications: TUI expects that the advancements made to 3D printing in order to create food contact safe sterilized materials will be ideal for the DoD to support soldiers in remote locations where resupply is limited. We also anticipate this technology to be a game-changer for people with little access to water. In the Phase II, we plan to explore the possibility to extend the technology to medical grade 3D printing which will have an even more widespread impact across the globe and in space. Medical facilities will be able to print sterile implants and surgical tools on demand, rather than requiring storage or waiting for the delivery of these devices.

U.S. WORK LOCATIONS AND KEY PARTNERS



U.S. States With Work

Lead Center:
Marshall Space Flight Center

Other Organizations Performing Work:

- Tethers Unlimited, Inc. (Bothell, WA)

Management Team *(cont.)*

Principal Investigator:

- Kristen Turner

Technology Areas

Primary Technology Area:
Materials, Structures, Mechanical Systems and Manufacturing (TA 12)
└ Manufacturing (TA 12.4)
└ Manufacturing Processes (TA 12.4.1)

ERASMUS: Food Contact Safe Plastics Recycler and 3D Printer System, Phase I Project

PROJECT LIBRARY

Presentations

- Briefing Chart
  - (http://techport.nasa.gov:80/file/23267)

IMAGE GALLERY

ERASMUS: Food Contact Safe Plastics Recycler and 3D Printer System, Phase I

DETAILS FOR TECHNOLOGY 1

Technology Title

ERASMUS: Food Contact Safe Plastics Recycler and 3D Printer System, Phase I

Potential Applications

The proposed ERASMUS technology will find use on the ISS and on any future long duration manned mission as a means to promote astronaut health and safety as well as lowering mission cost and trash generated by providing a means to create needed parts while in space. TUI anticipates that the expansion of ERASMUS into medical grade 3D printing in the Phase II effort will further the need for ERASMUS on the ISS, long duration missions, and on manned habitats.